Premium Laboratory Equipment

Heidolph Findenser™

Product Launch

Leading Safety Standards | Superior Ease of Use | Reduced Cost of Ownership

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A new accessory in the Hei-PLATE series

1. Hei-PLATE Magnetic Stirrer

2. Heat-On Block

3. Findenser

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The Hei-PLATE Series: safe heating and mixing

All models
- Volume up to 20 liters
- Max. rotation speed: 1 400 rpm
- Max. heating temperature: 300°C
- Heating power: 800 W

Hei-Connect
for comprehensive process documentation and reproducible results.

Hei-Tec
for higher requirements with temperature sensor.

Hei-Standard
for standard applications without temperature sensor.

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How to set up a Findenser™?

1. Hei-PLATE Magnetic Stirrer

2. Heat-On Block

3. Findenser

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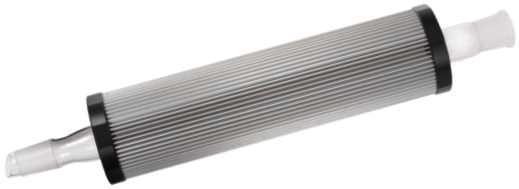
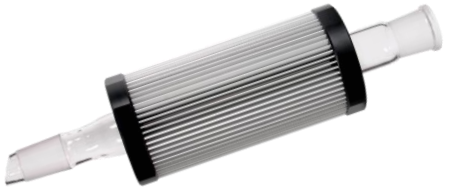
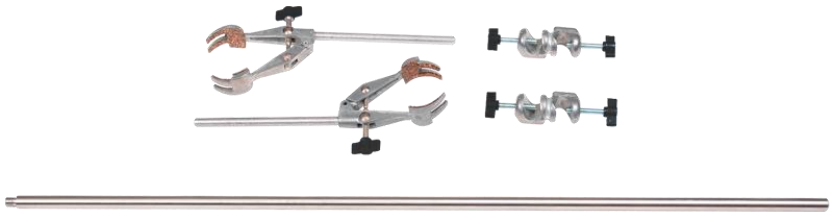
Findenser™ Overview





	Findenser™	Findenser™ Mini
Length x Diameter	400mm x 72mm	275mm x 72mm
Cone Size	NS19, NS24, NS29	NS14, NS19, NS24
Max Solvent Load/Volume	1 litre of solvent in a 2 litre flask	125 ml of solvent in a 250ml flask
Weight	1200g	670g

Cone sizes



Attachment kit

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What is a Findenser™?

Findenser™ is a super **air condenser** that uses a finned aluminum jacket to provide excellent heat transfer, removing the need for water cooling.

Replace the need for water cooled condensers in over 95% of all common chemistry applications.

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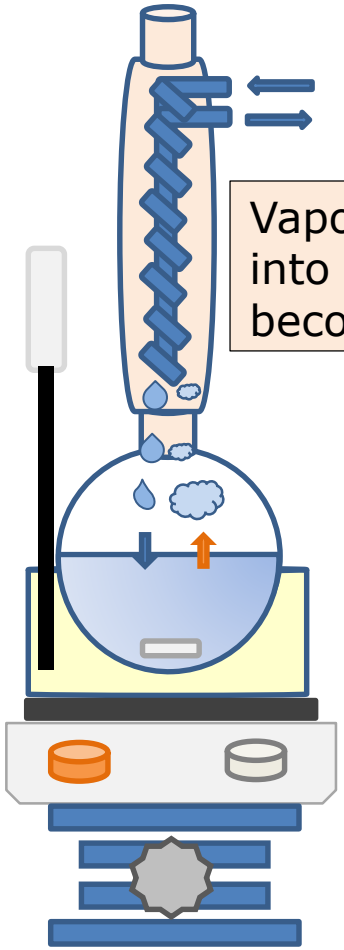
How does a condenser work?



Vapor goes up away from the flask into the condenser, where it becomes liquid = „reflux“

Heating function activated

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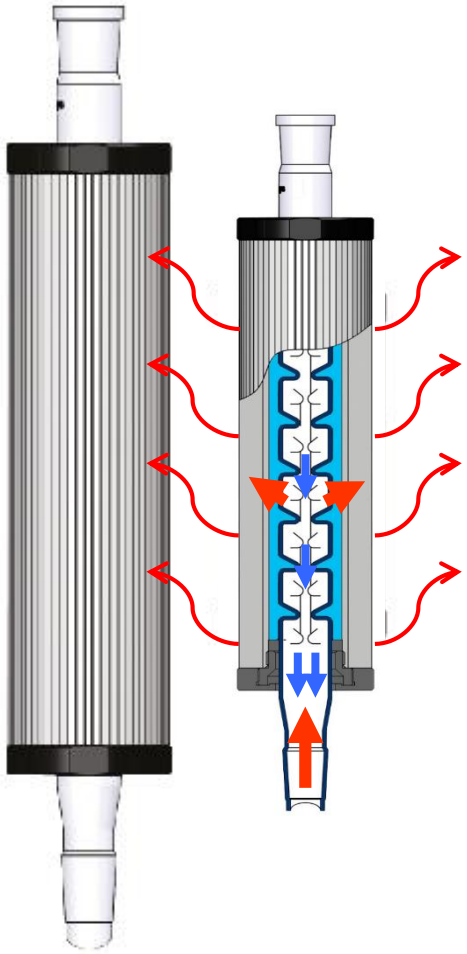
How does Findenser™ work?

- Findenser™ comprises an internal glass condenser and an external, finned aluminium jacket, between which a small amount of water is permanantly sealed.
- The glass condenser is designed to have a **greater internal surface area** than traditional condensers, giving it increased heat transfer capacity.
- The finned jacket fits around the glasss condenser further **increasing the external surface area**.
- The result is a super air condenser that **performs as well as a traditional water condenser** in the majority of condensing applications.



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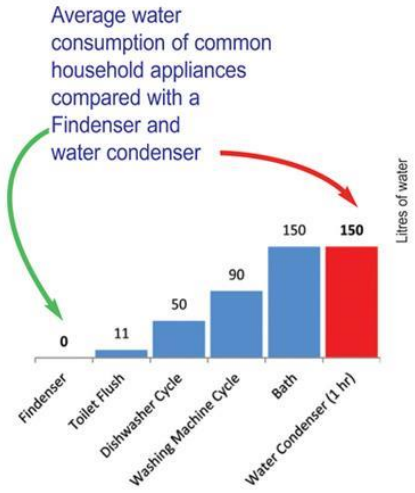
Heidolph introduces the Findenser™

Findenser™ - Safer, cheaper & greener alternative to water condensers

Advantages

- Saves money on water usage
- Saves water - environmentally friendly
- No risk of flooding from running water
- No water dripping from running water
- For solvent volumes up to 1 litre
- Easy to set up



Source: www.radleys.com

Heidolph Part Number	Description	Discount cat.	List Price
505-81700-00-0	Findenser™ NS24 Cone, NS24 Socket	V	€278
505-81710-00-0	Findenser™ NS29 Cone, NS24 Socket	V	€278
505-81720-00-0	Findenser™ NS19 Cone, NS19 Socket	V	€278
505-81800-00-0	Findenser™ Mini NS24 Cone, NS24 Socket	V	€262
505-81810-00-0	Findenser™ Mini NS19 Cone, NS19 Socket	V	€262
505-81820-00-0	Findenser™ Mini NS14Cone, NS14 Socket	V	€262
11-300-008-23-0	Attachment kit including: Stay bar, 2x boss head, 2x retort clamp	V	€181

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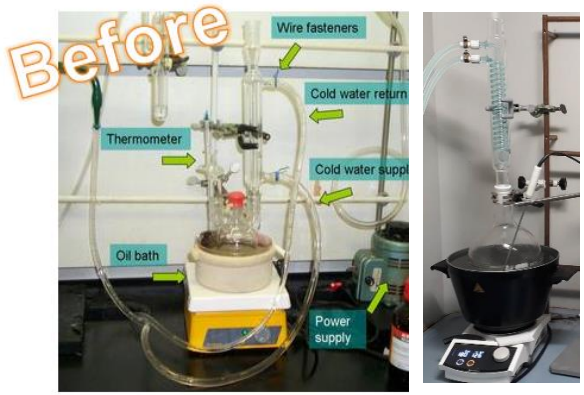
What to look for when selling?

Target group:

Chemistry labs & facility management in
- Research
- Analytics
- Development

} Current users of hotplates and evaporators doing **reflux reactions**

- Labs using water condensers on hotplates with oils baths or heating blocks
- Look for labs that have set ups like below
- Volumes of up to 1 litre (in a 2 litre round bottom flask)
- **Know** what solvent the customer will be using and its boiling point.
  - Generally, the higher the boiling point, the easier it is to condense
  - Findenser is less suitable for very low boiling point solvents such as ether



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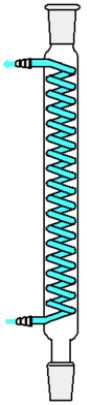
Suggestions for your customer meeting

- Are you doing reflux reactions up to 1L?
- Are you using solvents listed in the chart below?
- How good is your temperature control? (Must be within 10°C above boiling point)
- How easy is your system to set up?
- How do you run your overnight reactions?
- Have you ever had a lab flood here?
- What precautions did you take? Was there much damage?
- How often do you change that tubing?
- How much space does all the tubing need in the fume hood?



500ml solvent in 1000ml flask, 16 hours, heating 10˚C above boiling point for each solvent			
Solvent Loss Water Condenser	Boiling Point	Solvent	Solvent Loss Findenser
0.9%	40˚C	DCM	0.6%
0.7%	55˚C	Me tBu Ether	0.4%
0.4%	56˚C	Acetone	0.3%
0.2%	65˚C	MeOH	0.2%
0.2%	66˚C	THF	0.2%
0.1%	77˚C	EtOAc	0.1%
0.1%	78˚C	EtOH	0.05%
0.1%	82˚C	CH_3CN	0.1%

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Suggestions for your customer meeting

… customer with a recirculating system

- What water volumes do you have in your recirculating system?
  (often ~3000l, a leakage might cause big damage!)
- How reliable is that chiller? How much heat does it give off?

… customer using tap water

- Do you know how much you spend on water (per day / month / year)?
- Who in the builiding gets the bill? We might be able to reduce the costs!
- (=> contact to facility management)
- What happens to water pressure at night?

Tips & Hints

- **Do not overfill the flask:** To prevent excessive solvent loss always select the appropriate size flask and never more than half fill the flask. (e.g. 1 litre of solvent in a 2 litres flask)

- **Maintain good airflow:** It is important to maximize airflow around Findenser™ to allow heat transfer from the fins, via air convection.

- **Ambient Temperature:** Because Findenser™ uses air to cool, it requires the ambient air temperature of the lab to be significantly cooler than the boiling temperature of the solvent. *Experience shows that at ambient temperatures >24°C there is insufficient air cooling for Findenser™ to work effectively.*

- **Hotplate Temperature:** When using a condenser for the refluxing of solvents it is normal to set the temperature of your heat source above the boiling point of the solvent to counteract heat loss. However, this temperature difference should be kept to a minimum to avoid over-boiling and solvent loss.

Applications – Low Boiling Point Solvents

- Findenser™ may **not be suitable** for extremely low boiling point solvents such as Diethyl ether or Dichloromethane, particularly:
  - where volumes are greater than 100ml
  - or, where heating is set more than 10°C above the boiling point
- **In such instances we recommend you reduce the volume and minimise overheating.**
- Low boiling point solvents = typically boiling point below 50 °C

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Warning!!!

- Always ensure **both** flask and Findenser™ are securely **clamped**
- Do **not** expose to temperatures below 0°C
- Do **not** autoclave
- Do **not** exceed 60°C when oven drying
- Do **not** exceed 50°C when using in a dishwasher
- If Findenser™ were to crack, it **cannot be repaired** and there are no spare parts
- The Findenser™ warranty does **not cover glass breakage**.

Case studies

UCSD Chemistry standardises on Findenser™ for safety and sustainability
UCSD has implemented a safer, cleaner, greener technology that is cost-effective and easy to use, positioning UCSD as a global leader for laboratory safety and sustainability.

Results

1. UCSD replaced over 200 water condensers with Findenser™, with each researcher using 2-3 on average.

2. In the process, UCSD has eliminated wasteful water consumption and affirmed a campus-wide commitment to sourcing sustainable solutions where possible. Dr. Cohen sees a major benefit of Findenser™ as a greener alternative.

3. Reduction in the time it takes to set-up a reflux reaction. “The implementation of Findenser™ has been very smooth,” Cohen said. “We’ve seen immediate improvement by eliminating cumbersome hose connections that clutter valuable hood space, creating a safer, simpler environment in the fume hoods."

Contacts
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University of California San Diego

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Chemistry

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Product
Findenser

Case Study No.
CS1034

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Thank you for your attention!

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